MINUTES
of the
THIRD MEETING
of the
RADIOACTIVE AND HAZARDOUS MATERIALS COMMITTEE

October 8, 2013
Pecos River Village Conference Center
Carlsbad

The third meeting of the Radioactive and Hazardous Materials Committee (RHMC) was called to order by Senator Peter Wirth, chair, on Tuesday, October 8, at the Pecos River Village Conference Center in Carlsbad.

Present
Sen. Peter Wirth, Chair
Rep. Eliseo Lee Alcon, Vice Chair
Rep. Thomas A. Anderson
Rep. Cathrynn N. Brown
Rep. David M. Gallegos
Rep. Stephanie Garcia Richard
Sen. Gay G. Kernan
Sen. Carroll H. Leavell
Sen. Richard C. Martinez
Sen. John Pinto
Rep. Jim R. Trujillo

Absent
Sen. Carlos R. Cisneros

Advisory Members
Sen. Ron Griggs
Rep. Donald E. Bratton
Sen. William F. Burt
Rep. Brian F. Egolf, Jr.
Rep. William "Bill" J. Gray
Sen. Stuart Ingle
Sen. Daniel A. Ivey-Soto
Rep. Emily Kane
Sen. Michael Padilla
Sen. William H. Payne
Sen. Nancy Rodriguez
Rep. Nick L. Salazar
Sen. Clemente Sanchez
Sen. Lisa A. Torraco

Staff
Gordon Meeks, Legislative Council Service (LCS)
Renée Gregorio, LCS

Guests
The guest list is in the meeting file.

Tuesday, October 8

URENCO Update
Clint Williamson, chief executive officer, URENCO, and Jay Laughlin, chief nuclear officer and head of operations at URENCO, reviewed the company's mission, technology, operations and new construction. Mr. Laughlin indicated how privileged URENCO is to be operating in New Mexico and stressed its desire to be a good corporate citizen. He added that nuclear energy is the only option for sustainable global energy without leaving a significant carbon imprint. He stated that URENCO built its foundation on safety and quality and spoke of the importance of nuclear safety alongside security and the protection of its employees and the environment. Other than one incident with a forklift operator in this past year, URENCO's industrial safety record is stellar, he added, with nearly 650,000 hours worked without a construction-related accident.

Mr. Laughlin said that URENCO has 350 full-time employees along with a current construction staff of about 1,000. He then spoke about the state-of-the-art centrifuge technology, which was developed by a consortium of British, Dutch and German governments and includes some centrifuges that have operated constantly for 30 years. He reviewed the workings of the centrifuge, which spins natural uranium at a very high rate of speed and siphons off enriched uranium and turns it into a gas that is then cooled, while the depleted uranium is stored in cylinders and still contains a high percentage of U-235. He added that these "tails" can be run through a process that would generate more product at this stage.

Mr. Laughlin then provided a time line of URENCO's activities and spoke of the challenge the nuclear industry worked through regarding not having state and local support for nuclear facilities due to the separation of building and operating procedures, which led the Nuclear Regulatory Commission (NRC) to derive a combined license that allows for building first and operating later. URENCO had the first of these licenses in the country and is the first operating facility for new construction, too. (See time line details in the handout.)

In reviewing URENCO's operations, Mr. Laughlin said that the current operating cascade status is at 40 cascades in service, with 16 in phase 2. He added that on Thursday, the forty-first cascade will go into place, bringing the capacity to 3.1 million separative work units. Mr. Laughlin gave details of the plant's site and buildings, including construction currently happening and inspections ongoing with the NRC. Highlights of the construction at URENCO include being several weeks ahead of schedule on Module 1005 because of the modular approach taken

in construction; and phases 2 and 3 are showing reductions in both cost and scheduling time due to lessons learned in the first phase. In addition, phase 3 includes a new utility service module to handle the next phases.

Questions and comments ensued and the following points were made:

- U.S. Enrichment Corporation is working on its own centrifuge design, but it has significant maintenance challenges. The company only has one million to two million hours of centrifuge operation compared to URENCO's 60 million hours, and it is likely it will not be able to find a sufficient business base to enter into the U.S. market, despite the need in the market;
- by license, URENCO's "tails" can be maintained onsite for 25 years; meanwhile, URENCO is looking at various options for the tails, which still have enough uranium in them to extract, but the economic viability of extracting more or disposing of the tails has not been determined;
- options for what to do with the tails after processing include having Isotopes International purchase them, having tails go through a deconversion process, which is an expensive option, or having tails stored at the Waste Control Specialists (WCS) facility in Texas;
- URENCO owns the tails, but the utilities themselves own the material as it goes through the process of conversion, enrichment and fabrication;
- now that Germany has declined to use nuclear power, it is buying power from France and Brussels and still has some nuclear capability at its 19 operating facilities;
- government treaties that are related to nuclear energy give URENCO the authority to access technology developed by the British and the Dutch and do not allow URENCO to generate anything related to nuclear weapons, only power and fuel for nuclear submarines;
- nothing that URENCO produces is above 5.0% enrichment, although it is seeking an amendment to get this limit increased to 5.5% to have additional operating flexibility;
- inspections by the NRC are conducted two to three weeks per month related to emergency preparedness, maintenance, operations and construction; operations inspections are fairly continuous, but because URENCO has fewer safety standard issues, inspections are done only once a month or every six weeks;
- even though safety factors with nuclear energy can be regarded as substantial, four new power plants are in construction in Georgia and South Carolina; the modular process will ease the setup of new plants; worldwide, China plans on putting in 100 new reactors in the next 20 years and India, Korea, the United Arab Republic and Saudi Arabia have all been working on plants;
- related to energy needs, third-world requirements are increasing and although there is a place for solar and wind energy, it is necessary to look at the scale worldwide and the land mass required to utilize solar or wind power;
- smaller reactors could be instituted where there is smaller need and expanded as needs grow; there are microreactors that supply in the 50 megawatt (MW) to 80 MW range, some with a single refueling option, as well as other options in this range;

- the limit for tail storage at URENCO is 25,000 tails, and currently there are approximately 2,000 tails stored at the site;
- URENCO will supply the RHMC with figures on how much it pays in taxes to the state;
- URENCO pays $40 million in salaries annually;
- concerns over the effects of mining the land, the impact of new mines on limited water resources, leaving waste behind and tribes having to live with the legacy of mining;
- in the production process, URENCO uses less water than a nine-hole golf course does in a year and the cooling towers use 20,000 gallons of water per day; URENCO's water comes from the Eunice municipal supply; and
- the state is closing coal-fired power plants, and although nuclear energy does not affect climate change, New Mexico has an extraordinary resource in the sun and its residents could choose to use solar power without any impact to the land.

The RHMC unanimously approved the minutes from its July meeting.

Waste Isolation Pilot Plant (WIPP) Status Report

Tom Blaine, director of the Environmental Health Division at New Mexico's Department of Environment (NMED), and Trais Kliphuis, manager of the WIPP Group at NMED, gave an overview of the WIPP hazardous waste permit and the NMED's regulatory function. The 1,500-page document includes regulations on characterization, audits and monitoring, and there are 22 oversight or regulatory bodies involved in this process, six of which are within the NMED. Mr. Blaine emphasized that as a regulatory body, the NMED must continuously create a balance between enforcing regulations and developing a strong relationship with the permittee, and that this requires good communication. He added that often the process can require modifications to either processes or procedures and that the permit is a living document that provides guidance and clarity on the responsibilities of the permittee and the regulatory body. (See handout for what is contained in the eight parts of the permit.) Mr. Blaine summarized the three classes of permit modifications, which range from information changes to add clarity to day-to-day operations to major changes that would require public hearings and comment periods.

Mr. Blaine reviewed recent permit modifications, including a shielded container modification that allows remote-handled (RH) waste to be managed as contact-handled (CH) waste (RH waste requires equipment to move waste; CH waste has direct contact with a person). He also indicated that major modifications were made to the Waste Analysis Plan that eliminated redundancy in testing and reduced this cost by about $4 million per year, a significant portion of the budget. He stressed that the NMED is assured that the level of protection has not been affected.

Ms. Kliphuis summarized current permit modifications. She spoke of a Class 3 modification that excluded waste prohibition and was controversial, receiving 930 public comments. She stated that Ryan C. Flynn, secretary-designate of the NMED, is determined to have more hearings on this issue. The permit requires the NMED to have a Class 3 permit

modification if wastes are ever shipped to WIPP. The controversy is based on this waste being managed as high-level waste, and the hearing process would create a situation whereby the NMED would have to determine the type of waste, which is beyond the NMED's scope. Other current modifications are for panel closure design, repository reconfiguration and revising the volatile organic compound list. (See handout for time lines for these modifications.)

Ms. Kliphuis highlighted recent audit approvals, saying that each site requires an annual audit to ensure that policies, processes and procedures are compliant with the terms of the permit in order for waste to go to WIPP. Approvals were given from Oak Ridge National Laboratory, the Hanford site, Idaho National Laboratory, the Savannah River site and Sandia National Laboratories. She also mentioned that some audit reports are awaiting completion and others are upcoming (see handout for details).

Mr. Blaine jumped in to give accolades to the WIPP facility because its last inspection revealed no findings. He stressed that this fact indicates that the facility and its inspectors know the permit, which is a big task in itself, and that this shows there is good communication between the NMED as regulator and the permittee.

He indicated the number of shipments received at WIPP from various facilities, with Idaho National Laboratory clocking the most shipments at 5,689, and said that the number of miles and amount of waste being shipped coupled with the impressive safety record are phenomenal. Six out of 10 panels at the site are currently being utilized, and the facility is 51% filled.

In conclusion, Mr. Blaine said that the NMED continues to ensure that WIPP is in compliance with the hazardous waste facility permit and recommended NMED's web site to members for further information (http://www.nmenv.state.nm.us/wipp/).

Questions and comments ensued and the following points were made:

- in terms of the controversial permit modification related to excluded waste, facilities may not discriminate between transuranic (TRU) waste and high-level waste and may store it separately but handle it all as high-level waste; the permit states that any waste that has been handled as high-level waste cannot be shipped to WIPP regardless of whether it really is high-level waste or not; the permit modification adds clarity to this but does not change the waste acceptance criteria currently defined in the permit;
- the waste at the Hanford site identified as TRU waste that could be shipped to WIPP is contained in 11 tanks and would not have a large impact on WIPP's storage capacity;
- in Class 3 permit modifications, there are public comments before a hearing; the NMED reviews the comments and the permit, drafts changes and makes these available to the public for comment, then the public can request a hearing and enter negotiations; and
- there is no current proposal to ship liquids to WIPP, and the permit does not allow liquid transport.

WIPP Mission

Former State Representative John Heaton surveyed activities in southeastern New Mexico's "Nuclear Corridor" by citing those facilities currently in operation (WCS, URENCO and WIPP) and proposed facilities and activities that include International Isotopes, the Eddy-Lea Energy Alliance (ELEA) interim storage site, generic thermal load studies in salt and small modular reactors (SMRs). He said that WCS disposes of, stores, treats and processes low-level and mixed radioactive waste and that URENCO's enormous complex represents an investment of over $3 billion for the state and lauded its efforts and results.

Mr. Heaton spoke of the WIPP's next pilot mission to consider if salt is an appropriate medium for defense high-level waste. He gave an overview of the appropriateness of WIPP's location because of salt's effectiveness as a storage medium for nuclear waste, the very stable geology of the area, the fact that there is very little water in area and that salt in massive amounts is impermeable to water. He also said that it is easy to mine and that any fractures close because of pressure and the plastic nature of salt, so the land heals itself without needing any engineered barriers.

He gave a geologic profile of the WIPP site and said the amount of land withdrawn for the site is 16 square miles, of which two-thirds of a square mile is taken up by the repository, with plenty of space for other ventures. He mentioned all of the protests against nuclear power in the 1980s and then the community support for WIPP in 2009. Among WIPP's successes, Mr. Heaton cited its safe operation over its nearly 14 million loaded miles, with the repository now being about half-full. He spoke of the many limits in the federal Waste Isolation Pilot Plant Land Withdrawal Act that govern WIPP's operation.

Among the future projects Mr. Heaton detailed are an International Isotopes project to deal with depleted uranium out of the URENCO facility, which is now on hold because tail reconversion out of federal sites is not occurring; the interim storage facility in which ELEA purchased 1,000 acres of land for a potential site because of its remote location, geologic stability, dryness, presence of infrastructure and supportive community; a private fuel storage facility in Utah that is similar to what it would look like in New Mexico; and risk assessment for a dry cask storage system at a nuclear power plant.

He then reviewed the makeup of spent fuel storage casks, one concrete, the other steel-walled, alongside safety functions of the fuel rod, cannister and cask; fuel loading; welding of the lid; and transfer of the canister into an overpack, the pack to the pad, the cannister into the module and the cask to the site.

In reviewing why interim storage is crucial, Mr. Heaton said that power plants are overloaded and have little dry cask storage capacity. He added that although the federal Department of Environment (DOE) was required to take this waste by 1998, it has not, and utilities have sued the DOE. Out of the settlement fund, the treasury will pay out $20 billion

until the opening of a repository around 2048. He indicated that interim storage could be in place by 2020 or 2021, and this would stop these payments. He mentioned that power plants in high population areas need to mitigate their risks and added that the DOE will spend $250 million on new storage facilities at the West Valley and Savannah River sites. Also, repackaging for the repository is needed before storage can happen.

Among the economic benefits Mr. Heaton cited are jobs related to interim storage operations, a research and development facility, a repackaging facility and an intermodal maintenance facility. The issue of interim storage was the centerpiece of the blue ribbon commission report and is included in the Senate version of the proposed federal Nuclear Waste Administration Act of 2013, although House Republicans oppose any storage or repository language in the bill. Mr. Heaton advocated for a committee that could present the pros and cons to educate the New Mexico population and to embrace a consent-based process.

Mr. Heaton then reviewed reasons for conducting a generic salt defense disposal investigation (SDDI) at WIPP, which include cost and time savings, the fact that testing could begin immediately without any mining or investigations needed and tests would be used to prove and confirm a series of measurements, such as water movement, temperature, salt pressure and ventilation conditions. He then reviewed the layout and drifts of the SDDI tests as well as the schedule for the testing. He also said that Xcel is phasing out power to the cooperatives and that four eastern New Mexico cooperatives will be affected along with farmers in other western states. This will call for the need to replace a minimum of 360 MWs by 2023 and SMRs are being proposed to meet this need.

Todd Willens, chief of staff, Office of Congressman Steve Pearce, reported on H.R. 1879, the Government Waste Isolation Pilot Plant Extension Act of 2013. He pointed out that many Americans are not aware of the WIPP facility or its mission of disposing of low-level defense-mission TRU waste or its stellar safety record in working its mission. He then spoke of how WIPP's mission will end in 2030 and closure and decommissioning of the site will occur. He then emphasized the lowering of WIPP's shipment averages, from 36 per week, to 26 per week two years ago, to 20 per week at present. He said that WIPP officials indicate that number will fluctuate between 17 and 22 per week in the next several years and that this decrease will necessarily affect the job rate and the economy.

Because WIPP uses only 60% of the available mined area of its facility and there is enough room to handle and dispose of additional TRU waste, Mr. Willens built the case for H.R. 1879 by saying that one stream of TRU waste is really no different from another and that the only difference is the mission under which the waste was generated, either defense-related or non-defense waste. The assumption is that non-defense waste is a strong candidate for storage at WIPP because it poses no greater risk to public health than the defense-mission waste, Mr. Willens pointed out. Such waste is currently held at DOE sites around the country because there is no existing means of disposal. He said that H.R. 1879 would accomplish the following: it allows WIPP to accept all government-owned TRU waste; it cleans up TRU waste at Los Alamos

National Laboratory (LANL) and in six other states; and it disposes of 148,000 cubic feet of waste now sitting in temporary storage. Mr. Willens indicated that this additional waste would keep shipments to WIPP stable for another five to seven years. He said that H.R. 1879 was unanimously approved by the House of Representatives and is awaiting passage in the Senate.

To round off the nuclear discussion, Don Hancock of the Southwest Research and Information Center, a 42-year-old nonprofit that deals with uranium and waste issues, began reviewing WIPP's mission, which is accomplished at the cost of billions of dollars, to safely operate a facility for and transport TRU waste through more than 20 states, to meet commitments and time frames for cleanup of waste and to safely close, decontaminate and decommission the site beginning in 2030 or earlier. He pointed out that no deep geologic repository has yet been able to accomplish such a mission and cited failed German facilities that have closed prior to completing their missions.

He then encapsulated WIPP's results as of the end of September (see handout for details). He highlighted cost figures at nearly $6 billion to accomplish waste shipment and disposal thus far, a failure to handle all the RH TRU waste, that the volume of waste being shipped is decreasing every year, a failure to meet performance measures for waste and proposed changes for underground operations and expansion. He gave more details on RH waste and pointed to a table that shows that less than 47% of capacity is being used. He indicated that the DOE does not want to talk about what to do about the problem of not using RH waste capacity. (For figures, note those in red on the handout.)

Regarding a few proposals for the expansion of WIPP, Mr. Hancock noted that the proposal to store mercury at the site has nothing to do with WIPP's mission; that any effort to rename high-level waste, such as the idea to ship such waste from the Hanford site to WIPP, is another diversion from WIPP's mission; and that transporting commercial waste greater than Class C to WIPP is in violation of WIPP's authorizing legislation. In speaking of Representative Pearce's bill and amendment, Mr. Hancock stressed that WIPP is supposed to be a "pilot plant" and not the only DOE repository in the country and that waste other than defense TRU waste can be and must be stored safely in other locations until there are other repositories for such waste.

Mr. Hancock also spoke about the storage of commercial spent fuel, which New Mexico has historically not consented to store. He cited both the WIPP Land Withdrawal Act that specifically bans the transportation and disposal of high-level radioactive waste and spent nuclear fuel at WIPP and the failure of Wendell Chino's proposal with both the Mescalero Apache Tribe and the state. Mr. Hancock pointed to a map showing the locations of nuclear power reactors in the U.S., with 88% being east of the one hundredth meridian, yet the burden for storage of waste is on the western states. He concluded that spent fuel should remain on site at reactors in dry storage, which needs to be accelerated and improved.

Questions and comments ensued and the following points were made:

- a process is needed to set standards for a facility that could handle high-level commercial waste and to determine technically what the best sites would be;
- not everyone agrees that salt is a good medium for hot spent fuel;
- commercial mercury can be stored safely in sites designed for that mission, and it does not make sense to transport such waste to New Mexico; the proposal for this waste is to store it on the land's surface; the DOE's preferred alternative to WIPP is to bring this waste to WCS; Carlsbad sees this proposal as a diversion from WIPP's mission, with little or no economic benefit to the state;
- in determining community acceptance of nuclear waste administration, the blue ribbon task force recommended a consent-based approach; Congress has yet to decide whether the DOE will be the responsible agency or if it will be a new agency; and there is a question of whether competition results in the highest or lowest bidder getting storage and disposal facilities;
- what made repositories in Germany close down was that the sites were unsafe, but both sites were abandoned mine sites that do not resemble the WIPP site;
- the question of whether the "pilot project" nature of WIPP could be expanded to include other waste; Section 12 of the WIPP Land Withdrawal Act bans the transport of "high-level radioactive waste or spent nuclear fuel to WIPP".
- if the mission of WIPP is not expanded, much non-defense TRU waste will sit where it is, including at LANL; the original mission for WIPP was to receive high-level waste, and it is questionable if the amount of it "out there" would supersede WIPP's current mission; and
- once the 3706 campaign is completed at LANL, the buried waste, especially at Area G, has to be dealt with. It is not yet clear how much TRU waste from LANL will go to WIPP, and there is concern about bringing out-of-state waste to WIPP.

Public Comment

Betty Richards relayed her concern with the geology of WIPP and the drilling currently going on. She questioned why the Bureau of Land Management has allowed the drilling, which causes salt beds to be disturbed. She opined that the DOE did not go far enough in its water testing and that the drilling will create other conduits where the waste could then breech.

Carlsbad Brine Well Update

Jim Griswold, senior hydrologist with the Energy, Minerals and Natural Resources Department, reviewed sites on the map surrounding the brine well, which include an agricultural supply store, the Burlington Northern Santa Fe Railway, a feed store, a church, a trailer park and service stations, all in the vicinity of U.S. highways 285 and 62/180. He stated that there has been concern about the brine well's location after two brine-making operations of a similar history and geology failed in 2008. He also mentioned that sites outlined in yellow (a truck stop and service stations) contain underground storage tanks.

Mr. Griswold gave details of the professional and technical services contract that began with a request for proposals in April 2012; in July of that year, AMEC Environment and

Infrastructure was selected. He said that the scope of work was broken into three tasks: site monitoring and early warning, geophysical characterization and a feasibility study. In the first task, systems and programs were evaluated, improvements recommended and made, sensitive instrumentation conduits buried and probes installed for soil temperature and canal water level. Currently, webcams are being installed. He added that the cameras are largely for emergency response so that an assessment of what is going on at a site can be achieved from a distance.

In reviewing a surface subsidence graph, Mr. Griswold indicated the 72 surface benchmarks across the location showing a slow surface subsidence downward. On another graph, he indicated that four borehole tiltmeters have been installed that show movement happening in microradians; he added that this measurement is the heart of the early warning system. The graph for cavern pressure monitoring shows that the environment is not really stable, with pressure increasing over time. Ground water levels have declined by nearly 30 feet, although the levels did increase by about five feet in the "great flood of 2013", as Mr. Griswold said.

In the second task, a refinement of a magnetotelluric survey has been completed and a coring process to verify data was started recently as well as reinterpreting geophysical data that has been collected over time. Mr. Griswold referred to a photograph in the handout that shows the disturbed zone and how it has shifted slightly over time. He added that the zone incorporates about 40 million cubic feet of material and that based on production records, only 6 million to 8 million feet of salt would have been removed from this area. He said that the voided area is closely linked to the wells where fresh water was injected. He also spoke of the drilling that is done away from the disturbed zone that can verify the state of the salt formation. Because when a rock is put under stress, it will deform and there can be fractures in the rock that release energy, this energy can be read as very small seismic events. He explained that microseismicity is an enhanced early warning system that can show where areas of the cavern are weakest and indicate if any remedial action worked. He then showed the schematic of a bore, saying that no open bores are left but are closed up when the boring is completed.

The final task is the feasibility study, which Mr. Griswold said is due before the end of the fiscal year. He added that a report is in process that documents the next steps for decision-makers and looks at all options going forward. He said that the study will involve all of the stakeholders and that two public meetings have already been held this year. Mr. Griswold concluded by stating that minimum options that need to be considered are: back-filling the cavern; structural support and strengthening; controlled collapse; and basically doing nothing except to continue the monitoring.

Questions and comments ensued and the following points were made:

- filling a hole costs a whole lot of money; $1 million was spent back-filling a collapse that occurred, and it would likely cost about $5 million just to transport material for filling to Carlsbad;
- approximately $180,000 per month goes into a reclamation fund; this is a portion of the money coming into the fund from taxes imposed on the oil and gas industry;

- up against the edge of the basin, which is salted and thick, it is harder to mine and there are not a lot of people applying for new brine well permits, even though the need for brine in the fields is substantial; and
- methodologies, techniques and lessons learned in drilling are being studied so that this knowledge can be shared.

Adjournment

There being no further business, the meeting adjourned at 3:45 p.m.